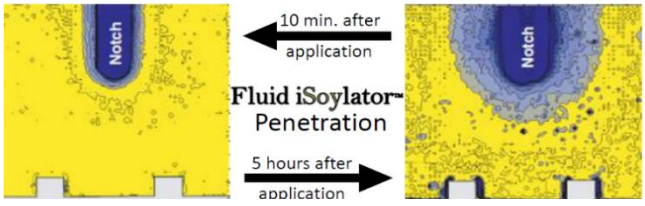
North Carolina Department of Transportation
Transportation Program Management Unit - Value Management
Innovative Technologies and Products Awareness Report
September 6, 2017

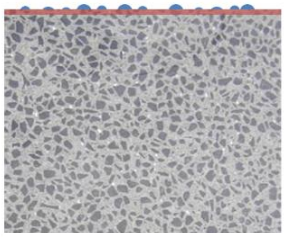
PRODUCT HIGHLIGHT – FLUID iSOYLATOR

Fluid iSoylator is a bio-based, penetrating, hydrophobic concrete sealant – an alternative product to traditional solvent based silane film treatment. Unlike traditional sealants that create a film over the surface, Fluid iSoylator is absorbed into the open pores in the concrete to plug them. This is a more effective way of blocking water and salt from infiltrating inside the pores which in turn prevents the freezing and thawing cycle of water from occurring inside the concrete pores over the winter months. The ongoing freezing and thawing creates new cracks in the concrete and causes continuous damage and deterioration.

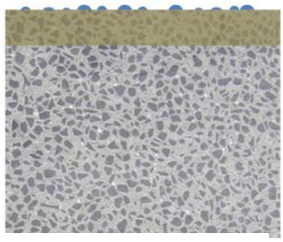
Additionally, the product has no residual slickness once absorbed. Fluid iSoylator is a USDA certified bio-based product containing 93% USDA certified bio-based content. It can be applied quickly and efficiently through a sprayer mounted on an easy to wear backpack.



Images display application after 10 minutes and following 5 hours.



Tradition Film Sealants



Fluid iSoylator

This product was developed in part by the Indiana DOT's innovation program and has completed several field trials in Indiana. These field trials have been successful and have shown cost savings in addition to improved installation productivity with its easy installation method. This product is currently approved on the NCDOT Approved Products List.

Plain Fluid iSoylator™ SBS

Final results from ASTM C 666 freeze-thaw testing. SBS is solvent based silane film treatment

PRODUCT INNOVATION – POLYESTER POLYMER CONCRETE OVERLAY

I-95 Cumberland & Harnett County

A Polyester Polymer Concrete (PPC) bridge overlay is a mix of sand, stone, and polyester resin that is an alternative to Latex Modified Concrete (LMC) and high performance concrete overlays. The overlay material allows for a quick set time and little preparation which reduces cost and excessive road closures. PPC was developed in the 1980's but until recently was not used in the southeast because of the scarcity of contractors certified to do this type of work in the region. Recently, a PPC contractor has come to North Carolina and NCDOT found a suitable trial site. PPC was used on the I-95 project in Cumberland and Harnett Counties which was completed in late 2016. After milling the pavement, a small amount of unsound areas along the bridge were repaired with full depth PPC followed by a full deck PPC overlay. PPC cannot be applied in wet conditions or in conjunction with deep chloride removal but when the conditions are right it has significant time and cost savings. It can be applied in any dry condition where the structural integrity of the bridge has not been compromised. The I-95 project saved 30% in costs when compared to LMC and with a 2 hour traffic ready cure rate the road was reopened quickly. Following this project, PPC will be used more consistently throughout NCDOT on bridge projects where applicable.